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Elementary Botany for Young People.

LAST spring a child's paper published in Boston offered a reward to any little one who would collect between the 1st of May and the last of September fifty kinds of native flowers and send in a list of their names. A small boy in Newark, New Jersey, began with flowers of the Dandelion, Chickweed, Violet, Spring Beauty, and some others, found in back-yards and vacant city lots, and then, as his collection halted, his mother accompanied him on a short ride into the country one May afternoon, and the list was increased by the Columbine, Hepatica, Dog-tooth Violet, Azalea, Strawberry, Geranium and several more. This was the beginning of a quest which was kept up with unflagging enthusiasm until the season of Golden Rods and Asters, and now his mother, under the title of "A Memory of Summer," has just published in *The Sunday Call* an entertaining account of the little collector's work. The list numbers less than a hundred, but it is pleasant to learn that the writer now finds herself "associating certain times and places with the finding of certain wild flowers"; but the point of most importance is that the child has begun the study of botany, and has begun it in the field and not in a school-book.

At this age of the world there ought to be no need of explaining how the mental processes employed in the investigation of natural objects which come within the scope of a given science differ from those used in studying a written treatise on the same science. The ordinary method is to place a book before the child and bid him memorize the facts which have been discovered by others. What seems the more natural plan is to encourage him to study the objects themselves, to compare them and classify them—in short, to do exactly the kind of work that the most advanced scientific explorers are engaged in. It ought to be noted, however, that the profoundest investigator is only carrying on in remoter fields the work which every child begins long before he can read or even speak; that is, he is familiarizing himself, by the actual use of his senses, with the objects about him, and making himself systematically acquainted with their qualities. It would seem to be the part of reason to encourage the exercise of those faculties which give habits of observation and comparison instead of permitting them to grow feeble through disuse during the years of school-life. No doubt it is proper to impart dogmatic information to the young, but it will hardly be urged that this is the chief end of an education. It is certainly worth something to a man to have eyes which do not fail to see the objects that surround him and a mind alert to note their relations and to draw inferences from them; and this is an equipment which the proper study of natural science furnishes.

Bearing in mind that the facts acquired are of less importance than the mental attitude and aptitude encouraged, the science of botany offers unusual advantages for developing the power of systematic observation. The material objects needed for the study are constantly present in infinite variety, abundance and beauty. In the example alluded to at the opening of this article flowers alone are spoken of, and if the sole use made of them was to identify the plants by name the educational value of the summer's collecting was comparatively slight. The naming of the plants is an unimportant matter compared with a study of their points of similarity and contrast and the effort to group them according to their affinities. But the flower is a small part of the plant, and the study need not lag when flowers are gone. Every tree now furnishes obvious characters in its general form, and in the way this form is developed by the peculiar ramification of its branches; in the color and texture of its bark, in the scars which show the arrangement of its leaves, in its spray and winter-buds. Broad leaved evergreens and conifers would furnish leaves if window plants could not be found in every house, and, as Professor Ward has observed, even at this season the nature of a Hyacinth-bulb can be studied in contrast with that of a Potato-tuber, and every nut or apple or orange that a child eats could be made an interesting study under proper guidance.

In short, there is no season when the child cannot make direct personal observations of plants, and when, under a skillful teacher, he cannot be drawn out into an intelligent description of what he sees. Moreover, there are no objects more attractive to the young, more agreeable or convenient to handle or better adapted to close observation and exact description. Professor Marshal Ward brought out these truths with great clearness in an address before the British Association for the Advancement of Science at its late meeting, and in regard to the proper method of teaching elementary observational botany he said:

> The teaching of elementary botany to children should commence with the observation of external form, and might well be initiated by a comparative study of the shapes of leaves, the peculiarities of insertion, their appendages, and so on. The point never to be lost sight of is that if you teach a child to discriminate, with the plants in hand and from observation only, between such objects as the simple, heart-shaped, opposite, ex-stipulate stalked leaves of a Lilac, and the compound, pinnate, alternate, stipulate leaves of a Rose, you lay the foundations of a power for obtaining knowledge which is in no way to be measured merely by the amount or kind of information imparted. It does not matter whether the child learns the trivial facts mentioned above, or not, but it is of the highest importance that the child be taught how to obtain knowledge by such direct observation and comparison; and the beauty of it all is that, as is well known, the child will retain most of such information as mere matter of course.
>
> There is one danger to be avoided, however. Young children should not be troubled with the difficulties of theoretical morphology; they should be made familiar with the more obvious roots, stems, leaves, tendrils, thorns, flowers, etc., and not forced to concern themselves with such ideas as that the flower is a modified shoot, the bulb a bud, etc., until they have learned simply to observe and compare accurately. Later on the step must be taken of rousing their minds to the necessity of drawing further conclusions from their comparative observations; but, if the teacher is really capable of teaching, it will be found that the children begin to suggest these conclusions themselves, and, this stage once reached, the success of the method is ensured.

The Beginnings of Fruit-culture in Germany.

AN article published not long ago in the *Illustrirte Gartenzeitung*, of Vienna, gave, on the authority of old state papers, some interesting facts with regard to the fruit-culture of former times in the kingdom of Wurtemberg. It seems that the earliest mention of this industry is found in accounts of the destruction of vineyards and orchards during the wars of the thirteenth and fourteenth centuries, while the first recorded edict for their protection dates from 1515, and imposes a fine on any one who shall cut down fruit-trees, wild or cultivated, on open grounds. Another edict, dated 1552, declares that children caught stealing fruit shall be punished by their fathers, or imprisoned, or put in baskets and dipped in the water. That wild fruits were still largely depended upon is proved by an ordinance of the year 1566, saying that a cultivator may pick up the fruit from wild trees, but must not shake them, as what remains on the branches must be left for the animals which at that period the upper classes so greatly delighted to hunt. It appears that the planting of fruit-trees was not prescribed until about 1600, when the setting out of Mulberry-trees was ordered. Each grown man under the age of forty was to plant one, and each stranger coming to reside in the province was to plant two on public land; and from later edicts it appears that the fruit of such trees could be gathered by the planter during his life-time and then by his widow, but that after her death they reverted to the commune. The edict of 1655, which declared that fruit-trees must not be planted nearer than seven feet and nut-trees not nearer than ten feet to a neighbor's boundary line, still holds good. The Mulberry continued in high honor through the eighteenth century, for we read of an order dated 1755 which prescribes the planting of all new roads with two lines of these trees, standing sixteen feet apart. In the following year Apple and Pear-trees are also named for such service, but merely in positions where Mulberries would not grow or bear. Only in 1792 was heed paid to the fact that the interval between the trees which sufficed for Mulberries was insufficient for the other sorts. Then a distance of twenty-four feet was prescribed for old roads and of thirty-two feet for new ones.

In 1718 a desire to maintain the reputation of the vineyards which produced the then famous Neckar wine, called forth an order against the planting of fruit-trees in vineyards, accompanied by sentence of immediate death against all that had already been thus planted, unless they were over fifty years of age, when they might be preserved until their time of bearing should be over. In 1723 a money reward was offered for the destruction of wasps' nests.

Until the end of the last century there were no nurseries of fruit-trees in Wurtemberg. The first was founded by Duke Charles Eugene when he established the *Karls Akademie* on his estate, "La Solitude," and decided that horticulture should be among the branches taught. The father of the poet Schiller was, after his retirement from the army, for many years director of this horticultural school.

Wine is, of course, mentioned very early in this series of public documents, but only in 1644 does one read of inns where beer as well as wine is sold, and drinks made from other fruits than the grape are not mentioned until 1650. The preparation on a large scale of all such drinks is then forbidden on account of the practice of using them to adulterate wine. It is only permitted to each farmer to prepare a certain stipulated small quantity for the consumption of his own household. Otherwise, it is declared, it would soon be impossible for the poor, and especially for women in childbed, to get their needful draught of pure wine, to say nothing of the ruin that might come on the country at large were this capital industry to deteriorate. A little later even the fabrication of small amounts of cider is forbidden; but it seems to have been impossible to enforce so radical a measure, and there is soon a return to laws which do not prohibit, but strictly control and limit its making. Not until 1735, however, was the sale of cider allowed, and even then the warning against its admixture with wine was reiterated. Sometimes the two beverages could not even be sold at the same time, though cider might be alone. The use of certain inferior kinds of fruit for brewing drinks is also often forbidden even at this late date. Much fruit seems to have been used in those days for cooking purposes, even more, proportionately, than at present, although the Germans are remarkable to-day for their love of this kind of food. Yet cooked preparations of fresh fruit seem to have been almost exclusively employed, for references to dried fruits are few, and the prices named for them in 1622 are so high that they appear to have been then a luxury. These careful and strict regulations, of which we have here quoted only a few among many, prove that the government of that time took a truly paternal interest in the affairs of private cultivators as well as of the commune as such. But there can be no doubt that such regulations did much to encourage the development of local industries, or, at least, to keep them in the best path that the wisdom of the time could discover. Moreover, they were sometimes in the direction of enlarging, not restricting, the liberty of poor farmers, as is proved by a law of 1567, which gave them the right to transplant young wild fruit-trees from the forests without any payment therefor. This privilege was a greater one than it may seem to modern readers, for there were vastly greater numbers of such trees in the forests then than now; and it was also more of a concession than we can easily realize, for hunting was then the one great amusement of the rich, and not only beasts of the chase were carefully preserved, but likewise the woods wherein they found their food. It should be noted, however, that the permission is given for personal use only; no transplanted tree is to be sold, and it seems as though each peasant were allowed to take but a single tree.

Vancouver's Park.

IN Stanley Park the City of Vancouver has a unique possession. It is in fact a section of the original forest, with all that is venerable and impressive in such an object, connected with a brisk young city, where everything is bright and new. Five years ago not a house stood here, where 15,000 people are now riding in electric motor cars through streets brilliant with electric lights. The city has the best hotel in British Columbia, and one of the most beautiful theatres on the continent, and is in touch with cities east, west and south, and even with Alaska.

In the skurry of growth on our side of the border a park is one of the last things to be thought of. Here it was one of the first. This is because Vancouver is not a mushroom town, but is growing normally and soberly, and without the rush and ruffianism of most new settlements. The wealth of the province in fish, fur, gold, coal, building stone and timber made a town needful hereabout, and the Canadian Pacific Railroad focused it on Burrard Inlet by making that its terminus. The city stands on a peninsula of high and healthy land, with room for metropolitan expansion, and its pleasure-ground covers a second peninsula given off from this, a slightly elevated tract ten miles around. It is encircled by a road; a drive-way and a few corduroy paths have been run across it; at the entrance, which is reached from town by a pretty bridge crossing a salt inlet, there is a bit of lawn and garden, a keeper's cottage and a few cages of native animals—bears, wolves, foxes, badgers, hawks, owls and eagles; but except for these slight changes and additions, and the huts of a score or two of Indians, who enjoy squatters' rights and have not been asked to move on, this reservation is in a state of nature, and it is designed to keep it so, in so far as consists with public use.

An inhabitant of eastern towns finds this park unlike anything that he has seen before. It is covered with forest down to the edge of the sea; indeed, the trees lean above the waves and fall into them in their decay. Burrard Inlet on the east, "the Lions' Gate" on the north and the Georgian Gulf on the west enclose it with ocean water that softens and cools the air, while the spicy fragrance of Cedar enriches it. On the landward side, great mountains, peaked with snow and scarred with avalanches, tower in alpine majesty, and this combination of sea, mountain and forest cannot be matched on our north Atlantic coast. Everything has a luxuriance that suggests a warmer zone, even the kelp in the bay throwing its streamers on the tide to a length of eight fathoms from tip to root, and the trees on shore rising from one to three hundred feet high. These trees are the glory of Vancouver. The height of them is less striking when seen in mass than when seen alone, for the breadth of green detracts from the apparent altitude, just as the width of Niagara Falls has an effect, at first view, of diminishing their height; but when they stand alone, or when a cabin or other familiar object is near enough to offer a standard of comparison, one better appreciates their majesty. I found that the readiest way to guess their height was to imagine one of our sky-scraping New York flats erected beside them, and to mark off with the eye spaces of fifteen or twenty feet, the number of such intervals indicating the number of stories that such a structure would contain. I judged from this crude measurement that the Times and Tribune buildings would be nearly hidden, in many parts of the wood, from the view of a person who was so placed as to look over the tops of the trees.

The Douglas Fir here has its noblest growth, and it is little surpassed by the giant Sequoias of California. Its grace and shapeliness are no less remarkable than its height, for it has a

delicate taper and is as straight as a mast. Indeed, if ships could be fitted here their masts could be "stepped" as solid timbers instead of having the top and top-gallant masts added as separate pieces. A sea captain tells me that he saw a mast taken from one of these trees, on Puget Sound, 104 feet long without a knot or branch in its entire length, while the bark was so thin, as compared with that of the Redwoods, that it gave no trouble to the strippers; and a scientist in Canadian service tells me that he measured one tree that threw its first branch 160 feet above the ground. It is from solid trunks of this tree that the Siwash hew their gondola-like canoes, which in their proportions and evenness of balance would be a credit to any boat-builder in the world. The huge limbs of the Fir give to the avenues of Stanley Park the shadowy solemnity and beauty of cathedral aisles, and the greenish brown moss with which many of them are draped may be compared to moldering banners such as hang from the walls of Henry VII's chapel in Westminster. Walking in these magnificent forest-arches, breathing their sweet air, listening to the mysterious music that the wind is making overhead and feasting on the rich color of the foliage, one feels the same uplifting of spirit that comes in the presence of grand mountain scenery, for the trees seem to be as distinctly types of greatness and endurance as the hills.

While the few deciduous trees that have gained roothold flourish like the evergreens they do not gain so great a size, although Poplars will be found not less than 100 feet in height. It is in the undergrowth, even more than in the trees, that the fatness of the soil and the indulgence of air and rain and sunshine are perceptible, and especially is this true of the Ferns, for the dainty Aspidium of our eastern fallows is here knee-high, and the common road-side Brake is nearly as big as an Elder-bush. Without choosing a particularly large one to measure by, I stood beside one of these plants, and straightening the stem, found that its upper frond was at least seven feet above the ground. One is occasionally startled by the glide of a snake and the whirr of a partridge, but as hunting is forbidden in the park it is not likely that this splendid undergrowth will ever be trodden down. The only thing to dread is that fire may somehow reach the wood, and that such disheartening damage may be wreaked as careless men have wrought among the Selkirks and in the valleys of the Fraser and Columbia, where miles on miles of wood like this have been converted into charred fields dotted with gaunt skeletons of Cedars, Hemlocks, Firs and Spruces. The greatest value of Vancouver's park is that it exhibits a native product at its richest. The illustration on page 635, which shows the wealth of this forest-growth, is taken from a photograph by Notman.

Brooklyn, N. Y. *Charles M. Skinner.*

Basket-Work of the North American Indians.—II.

THE conifers contain a certain number of plants of great value to the native basket-maker. The best known is the Great Cedar or Arbor-vitæ (*Thuya gigantea*) of the coast ranges and Cascade Mountains of Oregon and California. This tree has a thin fibrous bark coming off in long ribbons, of which the Indians make mats, bags, baskets and articles of dress. Says Dr. O. T. Mason, in the article already quoted: "Mats, wallets and rectangular baskets are produced by the plainest crossing of alternate strands varying in width from a millimeter to an inch." . . . "Cedar mats of great size, and made with the greatest care, enter as extensively into the daily life of the Indians of this vicinity (coast of British Columbia) as do the buffalo robes into that of the Dakota Indians. They may be seen upon the floors, sleeping berths, before the doors of the houses, and they are also used as sails for their boats and are wrapped around the dead."

The roots of several conifers supply excellent material for the woof of basketry, varying in color from gray to light red and dark brown. The Hoopa and Klamath Indians use the roots of the Bull Pine (*Pinus Sabiniana*), gathering large pieces, sometimes six inches wide, which they prepare by parching in hot sand. The roots of the Spruce (*Picea Engelmanni*, and probably others) are quite tough, and a common basket-material of the north-western Indians. The roots of the Tamarack (*Larix occidentalis*) are used by the Indians on the headwaters of the Yukon River for "basket kettles," which are woven very neatly, and ornamented with hair and dyed porcupine quills. The dye is obtained from "berries and a kind of grass growing in swamps." (Smith's Rep., 1856.)

Pitch is frequently employed by the Indians of the Great Basin of Arizona and New Mexico to render their trays and jars water-tight.

Of the *Liliaceæ*, the Yuccas stand foremost as basket and textile plants. Their fibrous leaves furnish excellent material to the Apaches, Pimos, Pueblos, etc. The *Yucca filamentosa*, *Y. gloriosa* and *Y. aloifolia* were formerly held in some esteem in the eastern and southern states for the manufacture of string, rope, mats and other household articles. In the great interior arid region, from California to Texas, *Y. baccata* is of decided economic importance. The full grown leaf is three to four feet long, tough and pliable, and yields an excellent textile fibre; when slightly parched in ashes it becomes still more supple, and may be split into strands of various sizes, which are woven into coarse mats and baskets, and otherwise used as whips, withes and rope by Mexicans and Indians. The leaves of the allied species, *Y. filifera* of northern Mexico, are equally good; valuable also for the same purposes are those of *Y. angustifolia*, *Y. elata* and *Y. Whipplei*.

To the same family belongs the *Xerophyllum tenax* of the Pacific coast, a common perennial with numerous radical, narrowly linear leaves two to three feet long. These leaves do not contain textile fibres, but are sufficiently strong and flexible for weaving, and are largely used by the Indians of northern California and Oregon for the white groundwork of their finer grades of basket-work.

Several species of Agave (*A. Americana*, *A. heteracantha*, *A. Sisalina*, etc.) are well known textile plants also turned to good account by the Indian and Mexican basket-makers.

It will probably be a matter of surprise to most botanists to hear that the leaves of *Iris macrosiphon* are much used in northern California and in Oregon to make ropes, fish-lines, nets and a cloth hardly distinguishable from coarse canvas. I have received interesting specimens showing the various steps of the process. The leaves are one to two feet long and one to three lines wide, each with two strong fibres forming the edges. These fibres are dexterously separated by the squaws with a sharp zinc thumb-piece, then neatly and evenly braided into cord of variable size, or otherwise woven into nets, cloth, etc. The leaves of the Palmetto (*Sabal Palmetto*) yield fine pliable strips, from which are made hats, mats, baskets, etc.; doubtless those of the *S. Mexicana*, which extends northward to the Lower Rio Grande, are used for the same purposes by the Mexicans. Those of the Saw Palmetto (*Serenoa serrulata*) are made into hats and baskets by the negroes.

Even the Ferns contribute several useful plants to our list. The Chain-Fern (*Woodwardia radicans*) of the Pacific Coast has long stalks, each containing two fibre-vascular bundles in the shape of large, flattened, brown threads, tough and flexible. While still fresh the stalks are bruised and pounded so as to liberate the threads, which are then cleaned and stained in an infusion of Alder bark. These threads become brittle in drying and must be used moist. Another Fern affording an elegant material for the woof of the nicer caps and baskets of the Hoopa and Klamath Indians is the Maidenhair (*Adiantum pedatum*). The stems are of a deep, lustrous black on one side and red on the other; after being soaked in water or wet with saliva, they are split open with the finger-nail so as to separate the black skin from the unused red side.

The bast of the Lime or Linden-tree (*Tilia Americana*) is exceedingly tough and strong, and readily made into cordage, matting and baskets. The wood and bark of the Leatherwood, a shrub common in the Atlantic States (*Dirca palustris*) and on the Pacific Coast (*D. occidentalis*), have always been extensively used by Indians and settlers. The bark is almost as strong and useful as that of the Lime-tree; the wood is soft, tough and flexible, so that branches can be bent into hoops without breaking. The bark of the Canoe Birch, as everybody knows, is readily and frequently made into jars and baskets in the region of the Great Lakes.

The wood of several hard-wood trees, cut into thin boards, ribbons or shavings, is sufficiently elastic to lend itself to basket-work; that of the White Oak (*Quercus alba*) and of several species of Hickory (Hicoria) was formerly much used for this purpose. The soft wood of the White Birch (*Betula populifolia*), and of other white-wood trees, is still employed along our northern frontier and in many parts of Canada by the descendants of the Algonkins and Iroquois. Thousands of their pretty baskets, wrought into many shapes, are sold in the towns and villages of the northern states.

Rushes, on account of their abundance, softness and pliability, have been more or less used by many tribes. Pretty specimens of Rush basketry, made by the Klamath Indians from undetermined species, are found in the National Museum. The *Juncus effusus*, often a weed in the Atlantic States, is said to be cultivated in Japan for the manufacture of fine floor-mats. The tough scapes of *J. robustus* are split by the Indians of south California and wrought into the material of their baskets.

In the Sedge family we have the common and widespread Bulrush (*Scirpus lacustris*) frequently employed by Indians to make mats, loose baskets, and as thatch for their huts; the var. *occidentalis* or "Tule" of the Pacific Coast, often eight or ten feet high, for these and other purposes is a plant of economic value.

Lastly let us mention the Cat-tail (*Typha latifolia*), whose leaves, twisted together, have, since the colonial days, been used in making chair bottoms. According to Professor Dudley they are now collected quite extensively in central New York for the manufacture of chair-bottoms and baskets.

The Indians have a great fondness for color, and, besides the many shades of the raw material, often use native dyes with excellent effect. The bark of several species of Alder yields, by infusion, a very good coloring matter; this bark, at first grayish white, becomes bright red by exposure. The Hoopa and Klamath Indians use the bark of *Alnus rhombifolia* (perhaps also that of *A. rubra*), the Navajos that of *A. incana*, var. *virescens*, which, says Dr. W. Matthews, U. S. A., they combine with the root bark of *Cercocarpus parvifolius*, using juniper ashes as mordant.

In the Great Basin the black dye used in the ornamentation of baskets is obtained from *Suæda diffusa*. A black dye is also made by the Navajos from the berries of *Rhus aromatica*, var. *trilobata*, by mixing them with ocher and the gum of *Pinus edulis*.

Fort Buford, N. Dak. *V. Havard.*

The Spotted Willow-twig Aphis.

OUR various species of Willow are particularly subject to the attack of aphides or plant-lice. No less than nine of these insects have been described as occurring upon them. No part of the tree, unless possibly the roots, is exempt from attack; and the bark and twigs receive the exclusive attention of at least five species. Some of these often become seriously injurious, and more frequently, perhaps, their presence is extremely annoying where they occur upon shade or ornamental trees in private grounds or public parks.

The aphides most commonly found upon Willow-twigs belong to the genus Melanoxanthus. Three American species of the genus are known. The Willow-grove Aphis (*M. salicti*) is probably the most abundant in the eastern and middle states. It is very similar in appearance and habits to the nearly related Spotted Willow Aphis (*M. salicis*), which is represented in the accompanying figures. This insect lives over winter in the egg state on the bark of Willow-twigs. Early in spring the eggs hatch into young plant-lice that insert their tiny beaks into the bark of the tender twig and suck out the sap. They grow rapidly, and each one soon becomes the mother of a dozen or more young aphides. Hence these lice are called viviparous. The generation that came from the egg are all wingless, but the young borne by these probably develop into both wingless and winged forms, which are also viviparous. Successive generations continue to appear throughout the entire summer, all being viviparous, and some having wings, while others have none. By midsummer they often have increased so enormously as to cover all the twigs of infested trees, making them appear filthy and unsightly, as well as impairing their vitality by extracting the sap. A single one of the lice hatched

Fig. 83. Spotted Willow-twig Aphis. Oviparous Female. (Magnified.)

from the egg in spring may become the ancestor of many millions before autumn. But in October a true sexed generation develops, the males being winged and the females wingless. By the union of these the true fecundated egg is obtained. The egg-laying female is represented at Fig. 83. It is about one-fifth of an inch long, bluish black in color, with a glaucous bloom, and has a distinct white line along the middle of the back. There is also a row of white spots along each side. The honey-tubes or cornicles are bright orange yellow. The

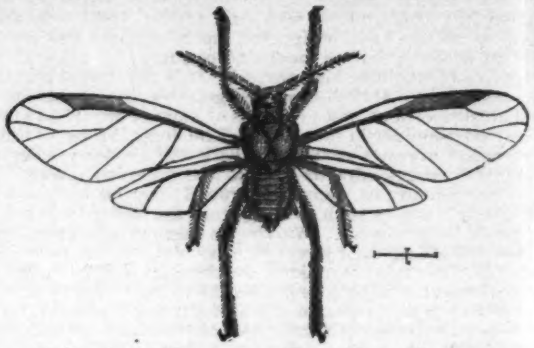

Fig. 84. Spotted Willow Aphis. Winged Male. (Magnified.)

wingless viviparous female is much like this in general appearance.

The winged male is represented, magnified, at Fig. 84. It is one-fifth of an inch long, with a wing expanse of one-third of an inch. The body is bluish black, with the wings hyaline and their veins yellowish brown.

The egg-laying habits of this insect are peculiar. The oviparous females apparently congregate for the purpose of depos-

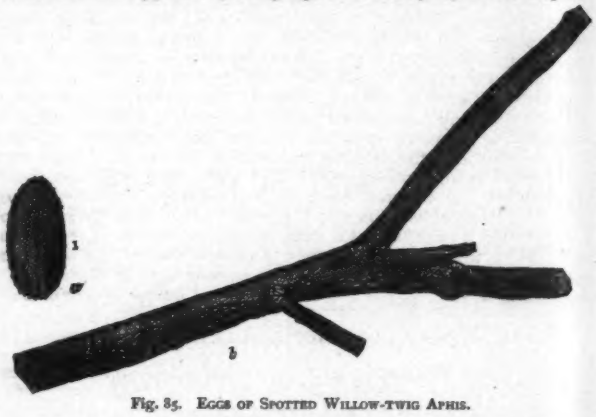

Fig. 85. Eggs of Spotted Willow-twig Aphis.

a, Egg, magnified; *b*, Eggs and oviparous females on Willow-twig.

iting the eggs in one or a few places on the tree. There they will cover the bark with them, as represented at Fig. 85, *b*. The egg itself is shown magnified at *a* of the same figure. It is about one-twentieth of an inch long and oval in form. When first laid it is covered with a liquid which on drying becomes grayish, giving the egg a peculiar appearance. Under the microscope the structure of this gray coating suggests a thin covering of felt.

The artificial remedies ordinarily used for plant-lice are applicable to this species. Kerosene emulsion and whale oil soap are the standard remedies for this class of insects.

Ohio Experiment Station. *Clarence M. Weed.*

Plant Notes.

Some Recent Portraits.

OF the plants figured in the December issue of the *Botanical Magazine*, the number which completes the one hundred and sixteenth annual volume of this, the most venerable of the publications of its class, the most interesting from a garden point of view is the beautiful purple-flowered *Thalictrum Delavayii* (*t.* 7152), a native of the mountains of Yunan, and one of the first of the numerous plants discovered by the Abbé Delavay to flower in Europe. It is a slender herb, two or three feet high, with long-petioled, ternately decompound, radical leaves, triangular in outline, and ten or twelve inches

broad, with wiry, dark purple petioles. The leaflets are a third of an inch broad, obtusely three to five lobed, with a cuneate, rounded or cordate base. The pendulous flowers are pale purple, in very lax panicles, and are borne on long, slender, decurved pedicels. The flowers are an inch across or rather more when expanded, with elliptic-ovate, obtuse ribbed sepals. The affinities of *T. Delavayii* are with *T. Chelidonii*, a native of the Himalayas.

Other plants figured in this issue are *Rhodostachys Andina* (*t.* 7148), an ornamental Bromeliad inhabiting the Cordilleras of the northern provinces of Chili; *Scaphosepalum pulvinare* (*t.* 7151), a native of New Granada, and the representative of a small genus of Orchids whose distinctive characters are the superior lip, the free or nearly free dorsal sepal, the lateral sepals connate under the lip, and the strongly recurved upper lip. If we are to judge from the present figure, this plant has little to interest the cultivators of handsome plants; *Arisema fimbriatum* (*t.* 7150), and *Rhododendron Boothii* (*t.* 7149), a handsome Bootan species with yellow corolla and conspicuous scarlet stamens, discovered with several other species forty years ago by Booth, who visited India at the instigation of his uncle, Mr. Thomas Nuttall, a familiar and revered name among the cultivators of botanical science in America, for the purpose of collecting seeds of Himalaya Rhododendrons. The editor, Sir Joseph Hooker, adds to his description of this species some interesting remarks on the distribution of the genus, which he believes, judging by the results of botanical explorations recently made in western China, will probably far exceed, in the number of its species, all previous estimates which have been made with regard to it, the discoveries made in the eastern Himalaya being only harbingers of what the vast mountain regions further east may be expected to yield in new forms of Rhododendrons. The genus, which is represented in western Europe by three species only, with two additional in the southern Caucasus, develops remarkably in the Himalaya region from west to east. Four species are found in the western Himalaya, while in Sikkim twenty-nine have been collected. Bootan has twenty-five species, of which seventeen occur also in the Sikkim provinces; but Sir Joseph Hooker believes, "considering how imperfectly that great and lofty province has been explored (its alpine regions not at all) it may safely be assumed that this number does not include half of what it contains." East of Bootan little is known of the vegetation until the borders of China are reached, and here in the western mountains between sixty and seventy species of Rhododendron have already been discovered, although only fragmentary explorations have yet been made; and it is, therefore, not impossible that the Chinese Empire may contain more species of the genus than all the rest of the world besides.

Foreign Correspondence.

London Letter.

WITH the thermometer registering from six to twelve degrees of frost almost daily, and a dense fog which has continued night and day for nearly a fortnight, the difficulties of in-door gardening in the neighborhood of London have been unusually trying lately. Soft-wooded plants, such as Begonias, winter-flowering Acanthads, etc., have been almost denuded of leaves as well as flowers. The only houses in which there is anything like interest are the Orchid-houses, and even here many flowers have suffered from the effects of the fog. Calanthes appear as though they had been boiled; the buds of Phalænopsis have turned yellow and fallen, whilst even such strong flowers as Cypripediums, Dendrobiums and Lælias are affected in color and durability.

VANDA GIGANTEA.—This is a magnificent Orchid, well named both in regard to its foliage and flowers. Flowering at this time of the year it is exceptionally valuable. Its leaves are stout, leathery, a foot and a half long by nearly three inches in width. The raceme is produced near the base of the stem, and is a foot long, as thick as a goose-quill and bears about a dozen flowers. These are composed of five ovate fleshy segments (sepals and petals) almost equal in size and arranged regularly round the small clavate labellum, forming a cup two and a half inches across. Their color is bright cowslip yellow, with blotches of cinnamon; the back of the sepals is tinged with purple. This is a good plant for large tropical houses, as is also its near ally, *V. Batemanni*. According to Griffith *V. gigantea* is a native of Burma, and is usually found on the trunks of *Lagerstræmia Flos-reginæ*.

CYMBIDIUM TRACEYANUM.—This is a provisional or rather unauthorized name for a remarkable Orchid which has lately flowered with Mr. Tracey, nurseryman, Twickenham, who exhibited it at the last meeting of the Royal Horticultural Society. It is probably a large flowered variety of *C. Hookerianum*, Reichb., f., as it resembles that species in every character except the size of the flowers. These in *C. Traceyanum* measure five and a half inches across; the sepals are an inch wide, the petals slightly narrower and the lip one and a quarter inches across. In color there appears to be no difference between the flowers of this and of *C. Hookerianum*. Mr. Tracey obtained his plant from an importation of *C. Lowianum*.

There are four recognized species of this section of Cymbidium, all of them natives of the Sikkim Himalayas. They bear a close resemblance to each other—so close that some botanists would not hesitate to unite them as forms of one somewhat variable species. They are *C. giganteum*, *C. Hookerianum*, *C. longifolium* and *C. Lowianum*. The first of this quartette is an old garden plant, but it rarely occurs in cultivation now. It was introduced into England about fifty years ago. The flowers are about three inches across and colored dull green, with brown longitudinal stripes on the sepals and petals, the lip being yellowish, with dark red spots.

C. HOOKERIANUM was introduced and flowered by Messrs. Veitch about the year 1860, but was not named until six years after, when Reichenbach named it in compliment to Sir Joseph Hooker, "with the writer's best wishes as a gratulation for the first new year's day of his Kew directorship." It has broader leaves than *C. giganteum*, and flowers nearly five inches across; the sepals and petals are apple green, with lines of cinnamon brown, the lip and column yellowish white, with numerous purple spots. As already stated, except that the flowers are a little larger, I cannot see how Mr. Tracey's plant differs from this species.

C. LONGIFOLIUM was described by Don, but did not get into English gardens until 1873, when it flowered with the Messrs. Veitch. It differs from the two species already referred to in its narrower leaves, smaller flowers, and in the evenness of the anterior segment of the lip, that organ being crisped in the other two. I have, however, seen it and *C. giganteum* in flower together, and could see no appreciable difference between them in the size, color or form of their flowers. *C. longifolium* is found at an elevation of 6,000 to 7,000 feet on the Sikkim Himalaya.

C. LOWIANUM is the most ornamental of the four, a good variety of it being a really grand plant when well grown and carrying its long spikes of large, lasting flowers. It was introduced by Messrs. Low & Co. in 1877, and described in that year by Reichenbach as *C. giganteum*, var. *Lowianum*, with this reservation: "It may even prove to be a new species, yet I do not dare to speak about this question from the materials actually at hand." Two years afterward the Professor raised it to the rank of a species, and in the same year a fine picture of it was published in the *Gardeners' Chronicle* from a plant flowered in the Clapton Nurseries.

These four, or, including *C. Traceyanum*, five Cymbidiums have long, arching, dark green leaves in tufts, and when well treated they form handsome specimen foliage plants. They are not difficult to flower, and their long, many-flowered spikes are very ornamental, notwithstanding the quiet colors of the flowers. The largest specimen Orchid ever seen in cultivation was a huge plant of *C. Lowianum* exhibited in London by Baron Schroeder last year.

CYPRIPEDIUMS.—There were some interesting hybrid Cypripediums exhibited at the meeting of the Royal Horticultural Society on December 9th. The most beautiful was Messrs. Veitchs' *C. Niobe* ×, noted by me last year about this time. It is the outcome of a cross between *C. Fairreanum* and *C. Spicerianum*, and both in form and color it is of exceptional merit. Were all hybrids in this genus as attractive as this, one would have nothing but praise for those who raise and distribute them. Unfortunately, good hybrid Cypripediums are the exception, not the rule. If one breeds pigeons or dogs or even cabbages he destroys all the progeny that are inferior to the parents; but a hybrid Cypripedium is honored with a name, a picture, a glowing description and often with a big price for no other reason than that it is of hybrid origin. If compared with its parents it very often proves inferior to both as an ornamental plant.

Mr. Sander also exhibited a fine hybrid named *C. Pollettianum* ×, interesting as being the offspring of two hybrids—namely, *C. calophyllum* × and *C. ænanthum superbum* ×. The last named is a beautiful Orchid, and *C. Pollettianum* is at least its equal in size, form and attractive colors. The dorsal sepal is large, deep port-wine purple running into lines toward the apex, the upper portion being rosy margined with white. The petals are dark purple, almost black, paler about the base,

where there are a few black eye-like spots; the pouch is rich brown-purple. The whole surface of the flower is very glossy. It is a dusky beauty and certainly one of Mr. Sander's best hybrid productions. *C. Castleanum* × also received much attention and was admired by many. It is the production of *C. superbiens* and *C. hirsutissimum*. The flower is large, claret-red, with a shade of purple and small black spots on the lower part of the petals. The lip is like that of a good variety of *C. hirsutissimum*. Mr. Sander is prouder of this than of any of his hybrids.

Other Cypripediums exhibited were *C. insigne longisepalum*, characterized by a long dorsal sepal, otherwise a poor form of a good, useful Orchid; *C. Alcides* × from *C. insigne* and *C. hirsutissimum*, worthless in comparison with its parents; *C. Orpheus* × from *C. venustum* and *C. callosum*, and certainly unworthy of so good a name. A plant called *Sileniperdium Weidlicheanum* ×, with *S. Hartwegii* and *S. Schlimii* for its parents, scarcely differs from the old *S. Sedeni*. *C. Maynardi* × is the result of crossing *C. purpuratum* with *C. Spicerianum*, and is not unlike *C. Lathamianum* × described two years ago. The largest flowered hybrid Cypripedium hitherto raised was one shown under the name of *C. Osbornei*, the offspring of *C. Spicerianum* and *C. Harrisianum superbum*. The dorsal sepal is two and a quarter inches by two inches, and white, except toward the base, where it is dull red, a line of the same color extending up the middle to the tip. The petals are three inches long by one inch in width, and the pouch in front two inches long and one and a half inches wide. The color of these parts of the flower is glossy brown-purple. Altogether a remarkable flower.

Cœlogyne barbata, with seven flower spikes about eighteen inches long and bearing about forty expanded flowers, deservedly obtained a cultural commendation. The white flowers, with a patch of brown-black on the front lobe of the hairy lip, were pretty as well as being unusual. *Lælia anceps*, bearing about thirty spikes, each with two or three expanded flowers, proved its excellence as a winter blooming Orchid. *L. Tresiderianum* ×, a hybrid from *L. crispa* and *Cattleya Loddigesii*, was represented by a well-flowered specimen, as also were the deep rose-crimson colored *L. Gouldiana* and *Cattleya O'Brieniana*.

London. *W. Watson.*

Cultural Department.

Fern Notes.

THE multitude of forms and habits to be found among Ferns gives opportunity for displaying their natural graces in a great variety of ways. Some of them, for example, can be very effectively used on pedestals or in baskets for conservatory adornment, and it may be worth while to give a small list of sorts especially adapted to this purpose. The sorts referred to may, as a rule, be readily obtained, and they do not require special attention in order to induce them to grow, they being strong-growing species that are content with reasonable care.

The soil should be an open, well drained mixture, as all vigorous Ferns will enjoy liberal watering, and the temperature should be fifty-five to sixty degrees at night in all cases, although *Woodwardia radicans* and *W. orientalis* do better in a lower temperature, say forty-five to fifty degrees at night, and under these conditions are less liable to the attacks of thrips.

The first to which attention is directed, and certainly one of the most graceful Ferns in cultivation, is *Goniophlebium subauriculatum*, a South Sea-Island species that has long been in cultivation, but yet is not nearly so common as its merits deserve. It has bright green pinnate fronds that sometimes attain a length of eight to twelve feet, and the fronds being freely produced and pendulous in habit, make this plant one of the most striking pedestal ornaments that can be imagined. The sori or fruit-dots of this species are also quite noticeable, being very similar to those of some of the Polypodiums, bright yellow in color and so deeply sunk in the frond as to produce a little protuberance or wart on the upper surface. In fact, the characteristics of the Goniophlebiums have induced some authorities to class them with the Polypodiums, and the plant in question is frequently labeled *P. subauriculatum*, while it has also been called *Schellolepis subauriculatum*.

Another fine plant of the same family is *Goniophlebium verrucosum*, which is somewhat similar in habit to the preceding, but has broader fronds and pinnæ. *G. verrucosum* is also pendulous, but its fronds seldom exceed four to six feet in length.

Nephrolepis davallioides furcans is a fit companion plant for the foregoing, being so strong and rapid a grower that it forms a perfect fountain of fronds five or six feet long when grown under congenial conditions. This fine plant is a crested form of *N. davallioides*, and is not only extremely handsome as a pedestal or basket plant, but is also one of the most effective varieties for exhibition, while the fronds being of good texture are useful for cutting.

One or two of the stronger Lygodiums may also find a place in our list, notably *L. volubile* and *L. dichotomum*, both of which are fine sorts with large, dark green pinnæ, and the scandent habit so well known in the Hartford Fern (*L. palmatum*), the American representative of this genus. *L. volubile* and *L. dichotomum* are both quite strong in growth and evergreen, the fronds continuing to grow until they reach a length of several feet.

Davallia solida will also become a handsome specimen when well treated, and is best suited for basket cultivation. It is a native of the Malay Islands, and produces a strong rhizome, from which issue its dark green fronds, arching in habit and about two feet long.

Woodwardia radicans and *W. orientalis* are both highly ornamental cool-house species, the first being found in portions of Europe, Asia and America, while the latter is also Asiatic, being found in China and Japan. *Woodwardia radicans* has already been described in these columns, but it may be repeated that the fronds are produced from a decumbent rhizome, are three to six feet long, pendulous and dark glossy green in color, and are frequently viviparous.

W. orientalis has much broader fronds than the preceding; but they are not nearly so long, and are usually dotted all over the upper surface with a profusion of young plants.

The Woodwardias may be potted in a somewhat heavier soil than the preceding species with good result, but the drainage should be thorough, as they enjoy an abundance of water, and during the summer are benefited by syringing overhead. Some of the best plants I have seen were grown in a house of Camellias, with which plants they shared the syringing.

Holmesburg, Pa. *W. H. Taplin.*

Tuberous Begonias.

THE cultivation of tuberous-rooted Begonias is so easily managed that these beautiful flowers should have a place in every garden as well as in every conservatory. The dry tubers should be obtained early in spring, say in February or March, when they can be had at a very moderate price. It must not be expected that there will be a great percentage of really fine flowers in the cheap kinds, as the best varieties are selected for their superior qualities in color, size and form, and are kept distinct and sold at a dearer rate. Nevertheless, the cheaper varieties are good enough for general bedding if obtained from a reliable source. When an absolute color is desired we must take a named variety of the given shade; but if varying shades are not objected to, then it is as well to get seedlings. The largest tubers are not always the best. Indeed, in my experience with both single and double varieties, I have found that the larger bulbs produced plants of coarser habit, and with foliage and flower lacking some of the finer qualities of those produced from moderate sized tubers. In any case the tubers should be plump and well developed.

The time of starting the roots must depend upon the time when flowers are wanted. If required for early blooming in the greenhouse or window they should be started in gentle heat about the middle of February in an open light position. They should be potted in single pots a little larger than the bulbs, using a soil composed of light loam, sharp sand and leaf mould in about equal parts. Good drainage is an essential in growing Begonias in pots, and when potted they should be placed in a temperature of sixty-five degrees, giving ample ventilation without exposure to cold draughts. The tubers will then seldom fail to grow, no matter where placed on shelves or benches, provided there is sufficient heat. When first potted sufficient water should be given to moisten the soil thoroughly and equally, and this condition of moisture should be maintained, avoiding a sour or sodden soil at any time. When the plants have pushed up two or three leaves and the roots have begun to show themselves around the inside of the pots, they are fit to be potted into larger pots in a compost containing a trifle more loam than that in the smaller pots, and this will promote a sturdier growth.

Plants so started will commence to flower about April and continue to do so throughout the entire summer. If flowers are not wanted before June, March or the 1st of April will be early enough to start the roots. At this time less artificial heat

is required, and the warmth of an ordinary greenhouse will suffice to start them into growth. I always prefer a little heat at starting, whatever the season, as I find they will grow more evenly instead of straggling along one after the other.

A very satisfactory way to start Begonias in the end of March or April is to plant the tubers in boxes about three inches deep, well drained and in the same compost recommended for pot culture. The bulbs are placed close together and lightly covered with the soil, which is gently pressed together and sprinkled with water enough to moisten it throughout. This moist condition should be carefully maintained and the boxes kept in a gentle hot-bed, where care should be taken to avoid a steamy atmosphere, which is likely to occur if sufficient ventilation is not given. Treated in this way they grow into vigorous plants. When they have formed one or two leaves they should be carefully lifted and set in

A Roadway in Stanley Park, Vancouver.—See page 630.

suitable sized pots, using the same soil as heretofore advised. Peat should never be used when leaf-soil can be obtained; but whatever materials are used they must be open and light, so that water will quickly pass away. With small pots little drainage is required. When potting the soil must not be pressed close. One or two taps on the bench is sufficient, especially for the single varieties. In potting the bulbs into five-inch or six-inch pots the tubers should first be barely covered with soil, and they should be placed as near the glass as possible. If plants for exhibition are desired they will need larger pots, and the shift should be made as soon as the roots touch the sides of the pots, for it is of prime importance that the plants do not become pot-bound; nor should they be allowed to become dry at the bottom, and if this condition should happen a thorough soaking should be given by dipping the pots into a bucket of water. The soil for a shift into seven or eight-inch pots should be heavier than that first used —that is, it should contain a little more loam, to which may be added a little well decayed hot-bed manure. The compost must not be sifted, but used coarse, but well mixed. Nothing like a rank manure must be used. The soil should be made moderately firm. Loose potting and rich soils conduce to a soft and rapid growth which will not flower as well until it has become hardened and matured. It should be always understood that it is of little use to pot plants that have reached their blooming stage. This work must be done before their roots have become matted round the pots.

Any plants required to form large specimens should have a vigorous growth encouraged from the start until they occupy their flowering-pots. They need light, rich soil, with a fair amount of heat and a moist air, with careful ventilation; but a stuffy atmosphere must at all times be avoided, as this will not permit the solid growth which alone gives flowers of the greatest substance and quality. When plants are showing their flowers in the greenhouse they should have a position where the air is constantly passing under and among them, otherwise they will decay or damp off in dull or wet weather. It will be of great benefit to the plants to get once a week a little weak sheep-manure water. When the plants have done flowering, which will be about the middle of October or the beginning of November, water should be withheld entirely so as to ripen the tubers, and this can be easily done by placing the pots on their sides under the stages or some other place out of the reach of frost, where they can remain until they are required again next year. The bulbs will require larger pots to start in by reason of their increased size.

As a bedding plant these tuberous Begonias have no rival. Easy culture, freedom of bloom and neatness of habit commend them to every one. For garden decoration the resting tubers should be procured about the end of March in different colors—crimson, scarlet, rose, pink, yellow and white, or mixed if preferred. The bulbs are best started in small pots in a cold-frame, or they can be started in boxes in windows, giving sufficient ventilation to avoid a spindly growth, and gradually hardened to the outside temperature. When they have formed two or three leaves and are well rooted they are ready for their summer quarters, which will be about the 1st of June. The beds should be prepared as for Geraniums or Coleus. When the plants are set they should for a few days be given a slight shading. A watering with a sprinkler should be given, and repeated often at evening during the dry summer months. A few stakes or light wood branches may be used to support them, as frequently the great weight of the flowers will carry the stems to the ground, and thus disfigure them. Neither rains nor dry, sunny weather affect their abundant bloom, which will continue until frost, when the tubers should be carefully lifted, slightly dried, and placed away in the cellar or on shelves in boxes like Dahlias until required the following season. Year after year they will increase in size and strength, producing finer flowers in greater abundance. The single Begonias can now be obtained at a very moderate price. Good double ones are still dear.

New Rochelle, N. Y. *Henry McCrowe.*

Brodiæas.

THE range of this genus is almost as wide as that of Calochortus. California has most of the species; Oregon, Nevada and Utah have some representatives; northern California is the home of the greater number. A few of the Brodiæas are sometimes found in sandy soil. *B. terrestris* always is, *B. ixioides* occasionally and *B. laxa* in depauperate specimens. I have also received bulbs of some Brodiæas unknown to me from the Sage-brush sand of Nevada and Utah. *B. capitata* and *B.* (*Brevoortia*) *coccinea* luxuriate in the débris of loose rock and mould on the hill-sides, and the remaining species are natives of clay soils from light to heavy; *B. stellaris*, *B. congesta*, *B. multiflora* in lighter, and *B. grandiflora*, *B. minor*, *B. laxa*, *B. ixioides* and *B. lactea* on rich clay or "wash" soils. *B. peduncularis* is found in the sand and mould in the beds and along the sides of living streams. All Brodiæas are lovers of water, while the last named species grows in situations where water is standing or dropping continually during the winter. The finest growth of *B. grandiflora* or *B. ixioides* I have ever seen was where winter streams broke over ledges of large loose rocks. The bulbs were in the rich mould in the interstices and catches, and subject to a drip of water until the blooming season, and after that became dry. On the sunny sides of the deep precipitous cañons, where the loose soil rock and leaves have slid down to the bottom of the slope, often growing on low underbrush, which its flower-stalks overtop, *B. coccinea*, the Vegetable Fire Cracker, grows most luxuriantly. In such situations stalks five feet high, and bearing from fifteen to thirty blossoms, are not unusual. *B. capitata* delights in similar soil, but in a sunny exposure. *Stropholirion Californicum*, or *B. volubilis*, a singular species in which the flower-stalks twine around any supporting object, delights in a soil like that suited to *B. capitata* in underbrush.

So much for natural conditions. I have perfect success with Brodiæas in shallow boxes, the same as described for Calochortus. For a covering I use clay and chip soil. With *B. grandiflora*, *B. capitata*, *B. coccinea* and *B. stellaris* rich soil scraped from a wood-yard proves excellent covering. With others clay loam, with various mixtures, with chip soil, have been tried, and the bulbs thrive in all of them. In boxes one will hardly use too much water until the blooming season, when moderate moisture only is required, after which the plants should be dried off. They should be planted shallow—four inches is deep enough—and they need abundant sunlight. Here all are perfectly hardy, and I am satisfied that with slight winter protection they will prove so in the eastern states.

Ukiah, Cal. *Carl Purdy.*

Hardy Plant Notes.

UNTIL the end of November *Trollius Europæus* and *T. Asiaticus* were both flowering and maturing seed in the open border, a fact which should be noted. A perfectly hardy plant that produces useful cut flowers for seven months in the open border, and that only requires a moist soil to make it succeed perfectly, stands a good chance of becoming popular if merit commands success. There is another Trollius that is a good garden plant, but its flowering season is short. This is *T. Japonicus*, the flowers of which are of a bright orange and most distinct. Its season of flowering is in early summer along with our native *T. laxus*, which is the *T. Americanus* of European lists and gardens, though it is a pity the name, *T. Americanus*, does not possess priority, since we have *T. Europæus*, *T. Asiaticus*, *T. Japonicus* and *T. Caucasicus*. The *T. laxus* has very little to recommend it as a garden plant. It also has a very short flowering season and then dies down until spring again. There is said to be a white form which occurs rarely, but I have never seen it and cannot say anything as to its merits. *Trollius Europæus* and *T. Asiaticus* are very similar in many respects, the principal distinction to an unbotanical eye being that while *T. Asiaticus* has stems usually unbranched, those of *T. Europæus* are often branched, with several flowers to a stem. The easiest way to get up a stock of Trollius is from seed, which must be sown at once so that it may be treated to a good freezing in a cold frame. Every seed will come up in spring, but if not subjected to the freezing seeds of this genus will remain dormant for years, as I have proved several times.

Delphinium Zalil is a most distinct yellow Larkspur. I had well nigh given up in despair of ever having living plants from seed, when I happened upon a fine lot of plants that were raised from seeds in a Massachusetts garden, and this set me thinking, and, thanks to Herr Max Leichtlin, I am now the fortunate possessor of a fine lot of plants raised from seed that germinated in three weeks from the time of sowing. We learn from Herr Leichtlin that seeds of this plant, if not sown at once after being gathered, take a long time to germinate. Seeds of this description, even if they possess vitality when sown, have to run many chances before they germinate. What with overwatering, or the reverse, the washing over of seeds, the growth of moss on the surface of seed-pans, but few seeds germinate, and snails or slugs, with their unerring instinct for pans that contain the choicest plants, often make short work of these; and a season's watching and care are lost. It appears that Monsieur Benary, of Erfurt, has purchased the stock of Herr

Leichtlin's seed, and those who wish to try again should do so through this source. This Larkspur is hardy in Massachusetts, but whether a perennial or biennial has not yet been stated decisively.

It is a matter of surprise to me that American dealers in hardy plants have not yet taken in hand *Phygelius Capensis*. This fine plant is hardy in Britain, where it is common in gardens, as also in other parts of Europe, where it can be obtained easily, and the plant is of the kind that travels well. Inability to endure transportation is a serious obstacle to the introduction of many beautiful plants that are rare in gardens simply for this cause. *Onosma Taurica* is a fair example of this. I was much pleased recently to meet with *Phygelius Capensis*, and to learn that it is hardy in this state with a little protection. It was thriving and flowering freely alongside of *Passiflora incarnata*. *Phygelius Capensis* grows about three feet high. One-half of the plant's stature goes to form a large-branched panicle of bright scarlet flowers, resembling somewhat those of *Pentstemon Torreyi*, and, in a word, the plant has all the merits of this Pentstemon without its one fault—namely, a tall habit compared with the strength of its flowering shoots. This Phygelius propagates readily from cuttings, and seeds are said to germinate readily also, but such has not been my experience, though it may have been that the seeds had lost their germinating power. However, cuttings root readily in about three weeks, and this may possibly be the best way to increase the plant. Even should this plant not prove hardy, it is a desirable one on account of its long flowering season, which lasts nearly all summer. While one possesses but a limited number of these plants it would be perhaps better to lift and store them in a cellar or other suitable place until their hardiness in particularly cold localities has been tested and satisfactorily proved.

South Lancaster, Mass. *E. O. Orpet.*

The Forest.

Some Vermont Forests.

THE numerous stumps of large Pine-trees and long stretches of stump fences still remaining in many portions of Vermont testify to an original supply of fine timber, such as exists now, if at all, in very small patches. The coniferous trees which are used for lumber—Spruce, Pine and Hemlock—are fast disappearing. Indeed, the fine first growth of Pine timber is already a thing of the past here. Among the mountains remote from railroads some fine Spruce lumber is still standing, but even in these retreats great inroads are being made. One needs only to compare the condition of a few such localities in their present condition with what they were ten or twelve years ago to comprehend what is going on. Twelve years ago the Spruce timber in the immediate vicinity of Mount Mansfield had not been touched, or at least only on its outskirts. On both sides of this grand mountain noble forests were standing. On the Stowe side, between the north end of Mansfield and Mount Sterling, which lies to the east, is what is called Smugglers' Notch—a wild cut between the two mountains on both sides of which are high jagged cliffs. Under and among these may be found flourishing in their season such rare boreal and alpine plants as have tempted many botanists to make long journeys to this spot for the purpose of seeing and collecting them in their natural home. At that time the road to this notch from the south led through nearly four miles of unbroken woods. The mountain slopes on both sides were covered with timber, a large part of which was fine first-growth Spruce. The carriage road leading to the summit of Mount Mansfield from the Stowe side also passed through much good timber. Several miles south of Mansfield is what is called Nebraska Notch, another wild pass through the mountain chain, with bare cliffs on the north and a sloping forest south. For miles east of this stretched a dark Spruce forest, perhaps as fine as the Green Mountains could afford.

Ten years have destroyed much of the beauty of these locations. A steam mill, located near the south end of Smugglers' Notch, has wrought much of this destruction; but on both sides of the mountain well up toward the summit, or as far as the timber of marketable size extends, and eastward of the Nebraska Notch, the Spruce-timber large enough for use has been cut, and much of it at a very small profit I am told. This seems probable, for it is fifteen miles to the nearest railroad station from most of it.

Another interesting locality was at Willoughby Lake. Here was a beautiful sheet of water, pure and cool, between two mountains, with its shores, especially on the west, embraced by a fine first growth timber. There was a remoteness and seclusion about this place that seemed to defy intrusion. This was the condition of Willoughby in 1878. Since that time the woods have been invaded, the little lake turned into a mill-pond, and the stamp of general desolation which lumbermen usually leave behind them is written on nearly every feature of this once beautiful spot.

The same thing is going on in other portions of the state. The large steam mill at North Stratford, New Hampshire, is fed, I believe, from the forests of north-eastern Vermont. The large quantities of saw-logs which in their season cover the Connecticut River above Wells River do not all come from New Hampshire.

The time is not far distant when Vermont will hardly be able to show within her borders a fair sample of her once abundant mountain forests.

Southwick, Mass. *F. H. Horsford.*

Correspondence.

The Nomenclature of American Grapes.

To the Editor of GARDEN AND FOREST:

Sir.—I send you the result of some inquiries concerning Vahlenberg's *V. palmata* which seems to settle in this country (it has already been settled in France, where American Grapes are most diligently studied) the dispute as to which name should be used, *V. rubra*, Mx., or *V. palmata*, Vahl., to designate the species of Grape which was rediscovered by H. Eggert on the Mississippi River above St. Louis in 1882, and which Dr. Engelmann, in the Bushberg Catalogue, 1883, claimed to identify as Vahl.'s *V. palmata*, which he so classified, and which was illustrated for the first time in the July, 1889, GARDEN AND FOREST, under Engelmann's name, *V. palmata*.

In the January number, 1884, of *La Vigne Américaine*, published in France, J. E. Planchon, referring to Engelmann's use of *V. palmata*, reviewed all the evidence then at command bearing upon the subject (pages 15-20). I make here a few extracts from Planchon's article: "Sous le nom de *Vitis palmata*, le botaniste danois Vahl. a décrit, en 1794, dans ses *Symbolæ botanicæ* (3e partie, p. 42), une vigne qu'il avait reçue du Jardin des Plantes de Paris et à laquelle il consacre l'article suivant que je traduis du latin en français," etc. After Vahl's description as translated by Planchon the latter remarks: "Une description aussi incomplète, ne comprenant ni les fleurs, ni le fruit, devait laisser des doutes sur la détermination de cette plante. Aussi l'a-t-on rapportée souvent comme synonyme à d'autres espèces, par example au Riparia de Michaux, à l'Estivalis du même auteur, ou même au Labrusca de Linné."

From the above it appears that Vahlenberg obtained the plant he described so incompletely from the Jardin des Plantes in Paris. This plant it appears had several synonyms, such as *V. Virginiana*, *V. Virginica* and *V. Virginiensis* (see Planchon's article, pp. 16 and 17). Finally, in summing up the whole matter, Planchon says (p. 20) that the evidence "me confirme tout à fait dans l'idée que le *Vitis rubra*, Michaux, est distinct du Palmata, Vahl."

This decision from such an eminent ampelographer as J. E. Planchon should of itself be sufficient; but to make doubly certain, I wrote to Professor Pierre Viala, who was for years associated with Planchon, who three years ago visited this country on a special commission from the French government to investigate the native Grapes of the United States, who since that time has published the completest works upon our species extant, and who this year spent six months in Paris as a specialist in Viticulture for the French government to investigate the plant in question, in the Garden of Plants, Paris, and let me know whether it is the true *V. rubra* of Michaux or not; and here is his reply, dated November 11th, 1890:

"Le *V. palmata* de Vahlenberg du Jardin des Plantes de Paris est un *V. riparia*, et non le vrai *V. rubra*, de Michaux."

Hence we have in synonymy *V. rubra*, Mx.; Syn., *V. palmata*, England, Bushberg Catlg., 1883, and GARDEN AND FOREST, July, 1889; *V. riparia*, Mx.; Syn., *V. palmata*, Vahl. So *V. palmata* must not be used except as a synonym.

It will be remembered that in an article of mine published in GARDEN AND FOREST for October 1st *V. palmata* was substituted where I had written *V. rubra*.

Denison, Texas. *T. V. Munson.*

[The question raised is one as to the weight of authorities. Dr. Engelmann, a very careful student, had no doubt that Michaux's *Vitis rubra* was identical with the older *V. palmata* of Vahl (not Vahlenberg). Planchon, on the other hand, thought that he had reason to believe that Vahl's plant was a form of *V. riparia*. We have never seen the

article quoted by Mr. Munson, but Planchon, in his revision of the order in De Candolle's "Monographiæ," makes *V. palmata*, Vahl, a variety of *V. riparia*, and while he keeps *V. rubra* distinct, he expresses a strong doubt whether it is anything more than another variety of the same species. Viala, of course, follows Planchon. Whether *V. cordifolia*, *V. riparia* and *V. rubra* should not all be grouped in one species is a matter to be determined by future study in the field by skilled systematists. This, however, does not touch the question in point, which is simply whose judgment ought to be followed, that of Engelmann or Planchon, as to the identity of Michaux's species with Vahl's *V. palmata*. We have preferred to follow Dr. Engelmann.—Ed.]

Clematis Paniculata.

To the Editor of Garden and Forest:

Sir.—Allow me to add one more note to those which have already appeared in Garden and Forest as to the beauty and value of this species, and it cannot be too highly commended, as probably the best of the small white flowered kinds. A grafted plant of mine has made a growth of ten feet this season, with numerous shoots which in early September were topped with long garlands of dainty, fragrant flowers borne in great profusion. But what is perhaps the most interesting phase of the plant does not seem to have been insisted on as it deserves, namely, its beauty in early winter. Its thick, leathery leaves proved to be very persistent, and in early November commenced to be touched with bright red and coppery tints, which, as the season advanced, changed to deeper ones, and now, in mid-December, the vine is a mass of dull bronze, over which hover gracefully a profusion of seeds of a deep, clear red, each furnished with a feathery tuft. The scarcity of foliage in the garden at this dull season makes valuable any plant with persistent foliage, even if of no value during the summer; but here we have a plant attractive in every season, and of very peculiar beauty, when most other things have entirely disappeared.

Elizabeth, N. J. *J. N. G.*

Recent Publications.

We have been favored with advance sheets of portions of the *Report of the Pennsylvania State Board of Agriculture*. The report of the Botanist, Mr. Thomas Meehan, is always interesting, and from it we take the following extract:

The correspondence of this Department has been for the most part confined to answering inquiries as to the names of plants—some of them being of weeds that have for the first time attracted attention. None of these have, however, been new to the state; nor does it appear that any noxious weeds are spreading more than usual. Inquiries are sometimes made as to the best method of destroying troublesome weeds. No plant can live if it is not permitted to make green leaves. If the land is full of something troublesome there is nothing better than to put it in Corn, and insist on continuous culture—not leaving the work till the weed to be destroyed has thrown out strong green leaves, but before it has had the chance to make any. Occasionally reports come to the Botanist that weeds were not killed by this process. Failure could only come from neglect to hoe or cultivate until the weed enemy has made some strong green leaves. It is a good lesson for a young farmer to give him some stubborn weed-plant—a Canada Thistle or Horse-nettle, for instance—and let him try the experiment.

In like manner it is wholly healthy foliage that will give full crops. Whenever grain loses its leaves before the ears mature the crop is lessened. An excellent lesson can be had from two hills of Corn. Commence to denude the plant of foliage before the silk or tassel forms, and watch the result on the crop. Even those who believe they understand the value of attention to these matters will be surprised with the force of lessons like these.

It has recently been placed beyond all doubt that the continual injury to the foliage of the Strawberry by the work of a Fungus, which spots the leaves, is what proves the continual degeneracy of varieties. The hundreds of new varieties of Strawberries that have been introduced during the past quarter of a century have not given us in any respect better kinds than we then had, but they take the place of kinds that degenerate. When half the leaf-blades are destroyed by the spot, the plant has only half the leaf surface it should have, and suffers proportionately. New seedlings are usually several years old before they get the spot. The Sharpless is said to have resisted the attack longer than any other. The methods of culture, necessary though they be, lower vital power to resist the spot. It is said that the Strawberry in its wild state is able to resist the spot.

Another instance of the value of foliage is illustrated by the early fall of the leaf on the Pear or other trees, from the leaf Fungus, from caterpillars or from other causes. It is well known that the fruit will not then ripen well.

Perhaps one of the best illustrations is by the loss of leaves on the Potato-plant by the Colorado beetle, when all know no crop is returned to us.

It is impossible for a plant to continue long without healthy leaves. We can turn this principle to good account in the destruction of weeds, and to good account also by doing all we can to keep the foliage healthy in the crops we grow.

Professor N. L. Britton, of Columbia College, has recently reprinted from the *Annals of the New York Academy of Science* his "List of the State and Local Floras of the United States and British America." It forms a complete index of works relating to the geographical distribution of our plants, and includes the titles of 791 treatises although all such minor ones as isolated notes and "short lists of observations" have been excluded. The works are divided into four classes: Lists in which exact localities are not given, those giving stations, those in which to the mention of stations notes or occasional descriptions are added, and descriptive lists properly so called. The order of arrangement is, however, by countries, states and counties, the class to which each work belongs being indicated by the annexed letter A, B, C or D. The earliest local list of American plants seems to have been John Bannister's "Catalogue of Plants," which relates to the large region then called Virginia and was issued in London in 1668. Next came another Virginian catalogue, published at Leyden by Johannes Clayton between 1739 and 1743. The plants of Orange County, New York, were described by Cadwallader Colden in 1749–1753, and in 1785 the Rev. M. Cutler, of Boston, published a list of New England plants. To-day 106 catalogues instruct us with regard to New England, while 121 refer to the middle states and the District of Columbia and sixty-six to the Pacific coast. These are the largest numbers attached to any of the districts into which Mr. Britton divides the continent, if we except British America, which, considered as a whole, furnishes 123 catalogues, with ten in addition that refer to the explorations of the Transcontinental Survey. But, of course, such division into districts is more or less arbitrary, and it is more interesting to note which individual states have been most diligently studied and described. New York heads the roll with sixty-five catalogues, then comes California with forty-eight, and then Massachusetts with forty-five, Pennsylvania with thirty and Ohio with twenty-eight. The labor involved in the preparation of this little bibliography must have been considerable, and it should meet with a grateful welcome not only from students bent upon personal improvement, but from librarians anxious to make the local departments of botanical libraries as complete as possible.

Horticulture in Canada.

Meeting of the Ontario Fruit Growers' Association.

At the first session of the annual meeting of the Fruit Growers' Association of Ontario, held a fortnight ago, Mr. A. M. Smith, the retiring President, delivered an address from which we make the following extracts:

Within twenty years the membership of the Society has grown from 30 to 2,100, so that it is now the largest body devoted to horticulture in America and perhaps the largest in the world. Thirty years ago berries were brought to market in pans and pails dipped out with hands or ladles into measures as buyers called for them, and, as a consequence, they were delivered mostly in the form of jam. Apples, pears and even peaches, when not too soft, were marketed in grain-sacks, jolted over rough roads in lumber-wagons, instead of being shipped as all kinds of fruit now are with careful handling and in attractive packages.

Notwithstanding the discouragements of the year the fruit crops on the whole have been as successful as any of the agricultural crops. This season has proved that it is not wise for one whose income is from fruit to depend altogether on one kind. Those who have taken their chances with apples or peaches alone find themselves in a bad position, while those

who have raised many kinds of fruits have found something to fall back upon. Many members of our Association have been doing good work this year by visiting various farmers' institutes and taking part in discussions on horticultural topics and imparting whatever information they could, relating to fruit growing. This is a patriotic and philanthropic work and it should be encouraged.

At the general Fruit Growers' Convention held during the year agents of the various transportation companies were present and gave an attentive hearing to our suggestions and grievances. They manifested a desire to furnish us with better facilities and greater dispatch in shipping fruits, and since the meeting there has been an improvement in this matter. Express companies, however, do not furnish proper accommodations, because they should have shelves in their cars on which to store the fruit, instead of piling the light baskets upon one another in such a way that the fruit is in very bad condition when it reaches the consumer. The pilfering of fruit from baskets and other packages in transport has reached annoying proportions. Almost every shipper is at some time accused of giving short weight or measure, the reason being that after the packages have been shipped they are broken into on the road and a considerable fraction of the fruit abstracted by employes or their friends. The loss is small in each case, so that the shipper does not care to report it, and if he does he gets no satisfaction; but in the aggregate it amounts to a serious tax upon the growers. There is no reason why fruit should not be as safe in a basket in the charge of an express company as money or any other article of value. We have hopes of checking this evil, because we find that transportation companies feel inclined to listen to our united demands; and this is one of the great values of such an organization.

Notwithstanding the advanced position of fruit-growing in this province, it is a fact that not one farmer in ten produces half enough for his own use, and this is true of even the most prosperous ones. It is surprising that in thriving agricultural communities there is so little horticultural taste and knowledge even where there are good buildings, blooded live stock and fine crops; we see no orchards, no small fruits, no flowers, no ornamental planting, and if there is any, it is in such a neglected state that it emphasizes the fact that horticulture is an unappreciated art. Perhaps a diet in which fruit formed a larger proportion would give us a more healthy set of men than one in which fat pork abounds, and if farmers would take a keener interest in surrounding their homes with beauty they would have less complaint to make of their children for emigrating to other countries and engaging in other pursuits.

Professor Saunders is doing a great work in producing new varieties of fruits adapted to the colder portions of our country, and his experiments in hybridizing Strawberries, Raspberries, Gooseberries, Currants and other fruits will prove of great benefit. I saw some of the results of his labors, in testing not a few, but hundreds of varieties of Raspberries, during their season, which had been produced by hybridizing and careful selecting.

Mr. Pettit, in a strong speech, urged that if the foreign fruit trade was to be made profitable, there should be certain market days at centres of traffic where the products of the grower could be disposed of directly to the buyer, and subject to inspection by an officer of the Government, as is the case with cattle, grain, etc. It is essential that grades of fruit should be established, so that a Government brand upon a package of apples or other fruit marked Number one should mean that it was of fair size and color, free from scab and worms, and packed properly in packages of standard size. In the same way grade Number two should have a specific meaning, and in all cases it should be understood that fruit for export should be properly packed. A few consignments of fruit in bad order gives a prejudice against the entire output of the region from which it came. Even where growers are honest in packing their fruits, if there is no standard there will be no evenness of quality, and nothing but strict rules, thorough inspection and accurate grading will give the buyer any guarantee or the grower any assurance that his Number one fruit is not a different article from the Number one fruit of his neighbor. After some discussion the following resolution was passed: Resolved, That we deem it the best interest of the fruit-growers, shippers and consumers, as well as the good name of our country, that a standard of excellence be established for such fruits as are shipped in barrels and other closed packages into the markets of our cities and towns and for transportation to foreign countries, and the Government is hereby petitioned to appoint proper inspectors for that purpose.

Professor Craig, in speaking of the method of the propagation of fruit-trees, said that while fruit-growers are busily engaged in looking for new varieties, few of them are studying how to improve old methods of propagating the varieties we have, or investigating the effect of the different modes of propagation upon the health and longevity of the subjects. That a tree makes a vigorous growth for three years in a nursery-row is no proof that it will make a valuable orchard-tree, and the reason is not always that the soil and climate are uncongenial. We should know whether the cion is married into a congenial family. The practice of grafting on pieces of roots, which originated in 1811 with Andrew Knight, has introduced many knotty problems into pomology which are still far from solution. Trees grafted on piece-roots allow of deep setting and encourage roots from the cion, and it would therefore seem that in warm climates, where there is no such thing as root-killing, budded trees would be more satisfactory; but in cold climates the piece-roots serve an indispensable purpose where hardiness is desired, because they allow the use of the deeply set cion. In this way the piece-roots serve only a temporary purpose, while the cion represents a variety of known hardiness. Seedling stock is variable, and only an occasional tree will prove sufficiently hardy to withstand severe climates. Good trees for all purposes can be obtained by using only the first and second cuts from the root, and these should be not less than three and a half inches in length, and the cion between five and six inches.

Pear-trees are almost always propagated by budding, but some firms in the United States are making a specialty of crown grafting on the whole roots. Russian varieties treated in this way and planted eight years ago on the farm of the late Mr. Charles Gibb are now making vigorous growth.

In a recent bulletin, Professor Budd, in discussing the stock for Cherries, mentions the Wild Red Cherries, *Prunus Pennsylvanica* and *Prunus pumila*, as two promising stocks. Of the first, he says that "it has been found that it unites perfectly with all varieties tried on Morellos, Dukes and Heart Cherries, either by grafting or budding. It sprouts, but when top-worked with vigorous sorts it does not appear to have any reserve material to waste in sprouts." Of the second Cherry, he says "as yet its use is experimental, but it unites well with all hardy sorts in budding, and it does not dwarf the parts worked upon it to a greater extent during the first five years than does the Mahaleb." I have tried both these stocks in a small way, but have not been sufficiently successful yet to justify my advocating their use.

In propagating the Plum the same objection to the Myrobalan stock can be urged as in the case of tender stocks for Pears and Apples. The native Plum of the east cannot be recommended, as it is affected by the Black Knot and it grows slowly. The western forms of the same species have not these defects and they unite well when budded or grafted with the Plum, the Peach and the Apricot. These western Plums grow readily from pits, and make large enough stock for budding in August of the same year they are planted. The art of grafting is of immense service, but I have little doubt that trees on their own roots would be, as a rule, less liable to disease.

The best and simplest protection for Roses in winter, according to Mr. James Webster, of Hamilton, has been found to be the mounding up of earth to the height of ten inches about the plant. This mound is removed in the spring when danger of frost is passed, and then the pruning is done. Not more than six or eight inches of wood is left on the strongest Roses, while from the less vigorous ones the weakest shoots are taken away entirely. The wood cut off in pruning is immediately burned, as by this means the thrips and insects which leave eggs in the wood to pass the winter are kept down.

In regard to the use of wood-ashes in orchards, Professor James, of the Guelph Experimental Station, said a fruit-tree makes three demands upon the soil—(1) for the wood, (2) for the leaves, (3) for the fruit. Ashes contain the elements which a tree uses to form healthy wood, and therefore they are useful as a fertilizer for this purpose. Leaves, by the time they fall, have returned their best parts to the tree; but still some loss occurs where the leaves are blown away. In the fruit the orchard sustains its loss mainly, and if we know the constituent parts of this we can tell just what elements are needed. Potash is the largest ash-element in all fruits, and therefore the best fertilizer will contain potash, and that is why wood-ashes are so valuable. Ashes, besides, have some phosphoric acid and lime elements which help to raise their value up to twenty or twenty-five cents a bushel, but when ashes can be had at ten cents a bushel they are the cheapest fertilizer that can be obtained. A complete fertilizer for an acre of orchard would be forty bushels of ashes, 100 pounds of crushed bone and 100 pounds of sulphate of ammonia.

To the question, Does it pay to prune Plum-trees? Mr. Willard answered that for some years he had been in the habit of cutting off from one-half to one-third of the season's growth during the mild weather in the winter when the wood was not frozen hard, and he was well satisfied that it was profitable. On varieties which make a long, rampant growth there is much breakage when the limbs are set full of fruit. By cutting back, short branches are forced out, which gives more fruiting surface and a stronger tree. He does not prune after the trees have begun to grow.

Notes.

The Eschscholtzia has been chosen as California's state flower.

The Proceedings of the eleventh annual meeting of the Society for the Promotion of Agricultural Science, held at Indianapolis, make a pamphlet of 125 pages. By the constitution of this association the number of its members can never exceed fifty, but these are the leading investigators in this country in the various sciences related to agriculture. This report contains the latest fruits of study and experiment in this wide field.

Secretary Woolverton, of the Ontario Fruit-Growers' Association, reported at the late meeting of that body that Mr. E. D. Arnaud, of Annapolis, had sent him samples of the fruit of a Cherry-tree which had been picked in September. The fruit is about the size and shape of the Kentish, and of a deep red color when ripe. It has firm flesh and agreeable flavor and bears transportation well. We should be glad to know more of this late-blooming Cherry, which is called the Clark.

Mr. Felix Oswald, writing of southern Mexico in the *Open Court*, says that "on the markets of Vera Cruz and Tampico vegetable products sufficient to support a family of five persons for a day can be bought for one real (twelve cents)." As meat, food and warm clothing are not required in that climate, and as "from the coast up to an elevation of 4,000 feet fuel for the purposes of house warming can be dispensed with for eleven months in the year," it is easy to understand that laborers can support a family on wages which, in northern lands, would not suffice to keep them individually from starvation.

The *Bulletin of the Torrey Botanical Club* for December, 1890, says: "After an absence of two years in South America, during which time he has collected a very large and valuable representation of the plants of that region, Dr. Morong has returned in health and safety. All botanists will bid him cordial welcome, both on his safe return and his entry upon a new sphere of usefulness and activity. The trustees of Columbia College have appointed him to be Curator of their herbarium, a position which has not been occupied since the death of Mr. P. V. LeRoy. In this appointment an important step has been made in the progress of American systematic botany."

Many persons must have wondered at the meaning of the word "*ha-ha*," still often used in England for a sunken fosse. Walpole's explanation is that when dividing walls were first abandoned, together with many other devices of the formal style of gardening, and ditches were substituted, the attempt "was then deemed so astonishing that the common people called them *Ha! Ha!* to express their surprise at finding a sudden and unperceived check to their walks." Modern dictionaries assert that the word is a mere reduplication of *haw*, a hedge, and can be written *haw-haw* or *ha-ha*. As the ha-ha is, however, a ditch not bordered by a hedge, but designed to be invisible, this derivation seems as unsatisfactory as Walpole's seems far-fetched.

Young Bamboo shoots, when tender, are eaten as a pot-herb, and to preserve their tenderness they are covered over with earthen pots to blanch them. That this food was in use among the ancient Aryans is evident from the prohibitions of eating the same by the three upper classes of the Hindoos. Green Bamboo shoots are used by the Nepaulese very generally as a pickle, which they prepare by cutting the shoot into small slices and steeping the same in water in a close earthen jar, where they ferment and generate a sort of acetic acid. This preparation is called Tâmbi in Nepaul. It is a favorite pickle both of the rich and poor, and pieces of the Nepaulese round Capsicums, called Khorasani, are thrown into the same.

A correspondent of *The North-western Lumberman* calls attention to the interesting fact that about seven-eighths of all the spools used in the world are produced in Maine and New Hampshire, or are made from lumber manufactured and shipped from those states. Millions of feet are sent every year to the great thread works of J. & P. Coats at Paisley, Scotland, the greatest establishment of its kind in the world, alone. No material for a spool has yet been found as good as the wood of the Canoe Birch. Attempts have been made to make spools of glass and from wood-pulp, but they have not proved successful. A few years ago Birch-land was considered almost worthless in northern New England; now it is held at as high prices, when situated near railroads, as Pine-land. The extension of the Canadian Pacific Railroad into northern Maine is said to have brought a large amount of Birch-timber within easy access of the mills.

The Report of the annual meeting of American Cemetery Superintendents at Boston last August contains much that is of permanent value. A sketch of the life of Adolph Strauch, by Mr. Eurich, of Toledo, is a deserved tribute to the man who originated the so-called "Lawn-System" which has done so much to encourage what is natural in the planning and planting of cemeteries. The essay by Mr. G. Troup, of Buffalo, on cemetery roadways is worthy of study by every one who is interested in road-construction. Mr. Simonds, Superintendent of Graceland Cemetery, in Chicago, read a paper on the trees and shrubs which have proved most valuable in that climate; and Mr. A. W. Blaine, of Detroit, in discussing "Mistakes in Cemeteries," touched upon many common errors in design and maintenance. It is a misfortune that the essay of Mr. J. G. Barker, of Forest Hills Cemetery, Jamaica Plain, which was distributed at this meeting, could not have been included in the Report. Mr. Barker's paper was read before the Massachusetts Horticultural Society, and it contains descriptions of several of the most interesting cemeteries of the country.

The ugly and dilapidated board fence which has surrounded Mount Morris Park, in Harlem, is being torn down, and will be replaced by a fine retaining wall of stone, surmounted by an iron railing. The improvement was desirable, for, although almost unknown to inhabitants of the lower parts of our city, this is certainly the prettiest of all the small parks in New York, and is very probably the most individual park of its size in the world. About two-thirds of its area (which includes two city blocks) is level ground, charmingly laid out with wide lawns, unbroken by cross paths, and with encircling walks flanked by good trees and beautiful groups of shrubs. But in the south-east corner of the park the ground rises suddenly to form a rocky hill higher than the tops of the surrounding houses, which is covered with great old trees, chiefly Oaks. Such an isolated hill rising amid streets which are perfectly level, is a most unexpected feature to find in the heart of a great city, and its harmonious contrast with the flat lawns around it is extremely picturesque. We advise our city readers to use one of the first days when the trees next begin to bud for an excursion to Mount Morris Park, certain that they will feel themselves rewarded, and will wonder why its singularity and beauty are not matters of more general knowledge.

A writer in the *Bulletin of the Torrey Botanical Club*, reviewing Dr. Schweinfurth's recently published work called "Sur certains Rapports entre l'Arabie Heureuse et l'ancienne Egypte," the conclusions of which are based on an Arabian journey during which the author collected 920 species of plants, cites the following interesting facts: "The ancient Egyptians cultivated certain trees, dedicated to certain divinities, and among them were the Persea of the ancient Greeks (*Mimusops Schimperi*) and the Sycamore; the leaves and fruit of both trees having been frequently found in ancient tombs, where they had been deposited as offerings. The 'Persea' (not to be confounded with *Persea gratissima*, Gaertn.) has for centuries disappeared from Egypt, but the Sycamore is still found there in large quantities, though only in cultivation. The region of the Upper Nile, rich as it is in Fig-tree species having characteristics that bring them into close relation to the Sycamore, has not as yet shown any in a wild state that might be considered its ancestor. Dr. Schweinfurth gathering from Forskal's notes that in Arabia were to be found species allied to the Egyptian Sycamore, was especially interested in searching for them, and learned that the Fig-tree known as 'Chanes' in the mountains and as 'Bourra' on the plains, is identical with the Egyptian tree which incontestably has its origin there. He also found the 'Persea' growing wild and called 'Lebbakh,' a term used by the Arab geographers of the middle ages, and which to-day in Egypt is applied to an Acacia introduced from India (*Albizzia Lebbek*), and which is now, as 'Lebbakh,' a widespread road-side tree."